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Environmental Protection  
Agency

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## U.S. EPA Begins Field Work at the Kerr-McGee Residential Areas Superfund Site

West Chicago, Illinois

March 1994

### Introduction

The United States Environmental Protection Agency (U.S. EPA), with support from the Illinois Department of Nuclear Safety (IDNS), has begun field investigation activities at the Kerr-McGee Residential Areas site in West Chicago and unincorporated DuPage County. U.S. EPA's activities will identify areas contaminated by radioactive materials from the Kerr-McGee Rare Earths Facility (Kerr-McGee factory). Based on the results of the field work, U.S. EPA will determine which areas require removal of contaminated soil during future remediation activities.

There are four Kerr-McGee Superfund sites in the West Chicago area. Those sites are: 1) Reed-Keppler Park, 2) West Chicago's Sewage Treatment Plant, 3) Kress Creek and the West Branch of the DuPage River, and 4) the Residential Areas site. The Kerr-McGee factory is not a Superfund site, but is regulated by IDNS. This fact sheet focuses only on U.S. EPA's field work at the Residential Areas site.

U.S. EPA's surveying and sampling activities at the Residential Areas site are being conducted at many properties in West Chicago and unincorporated DuPage County. While the name suggests otherwise, the Residential Areas site encompasses not only residential, but also institutional, commercial, and municipal properties, where contaminated materials from the Kerr-McGee factory were used as fill material or otherwise came to be located on the property. In some areas, the Residential Areas site overlaps with the Kress Creek site.

Many government agencies and companies are involved in the field activities, which will occur in phases and are expected to continue until early 1996. U.S. EPA has hired a contractor, CH2M Hill, to conduct some of the field activities with U.S. EPA oversight. CH2M Hill has expertise investigating sites with radioactive wastes. Negotiations with the Kerr-McGee Chemical Corporation (Kerr-McGee) will determine if Kerr-McGee will conduct later phases of the project, such as the removal activities.

This fact sheet summarizes a document called the "Work Plan for the Engineering Evaluation/Cost Analysis and Remedial Investigation/Feasibility Study" that describes field investigation activities. For greater detail, community members are encouraged to review the actual work plan. The work plan is available at two local information repositories. (See the back page.).

### Public Meeting --

Interested community members are encouraged to attend a public meeting to learn more about U.S. EPA's field investigation activities at the Kerr-McGee Residential Areas Superfund site. U.S. EPA will describe the field activities and answer questions from the public during the meeting.

**Date:** April 14, 1994

**Time:** 7:30 p.m.

**Place:** West Chicago High  
School Auditorium  
326 Joliet Street  
West Chicago, Illinois

## Field Investigation Activities

There are many tasks which comprise the field investigation activities. These tasks will be conducted over the next two years as U.S. EPA systematically investigates properties in the Residential Areas site study area. The primary tasks consist of preliminary activities, indoor radon/thoron monitoring and gamma radiation measurements, a pilot study, operation of a near-by support laboratory, soil sampling, and radiological characterization surveys.

The field investigation activities will be performed in areas with suspected elevated levels of gamma activity, called "target areas." The boundaries of these target areas were identified from a 1989 aerial radiological survey and include properties located east of the Kerr-McGee factory and in the neighborhood of Reed-Keppler Park among other areas (see Figure 1). Not all of the properties located in target areas are suspected of being contaminated. Only those properties shown by the field investigation to contain contamination above U.S. EPA's allowable levels will be candidates for removal action.

The field investigation activities will be conducted according to various timeframes. For example, indoor air monitoring for radon and thoron, two radioactive gases, began in January 1994 and will continue through mid-March and then begin again in the winter of 1994-1995. A field pilot study (see "Pilot Study" subsection on page 3) will be conducted in March/April 1994. Full-scale radiation surveys and soil sampling are expected to begin in May 1994 and continue through the end of 1995, with some interruptions due to winter weather.

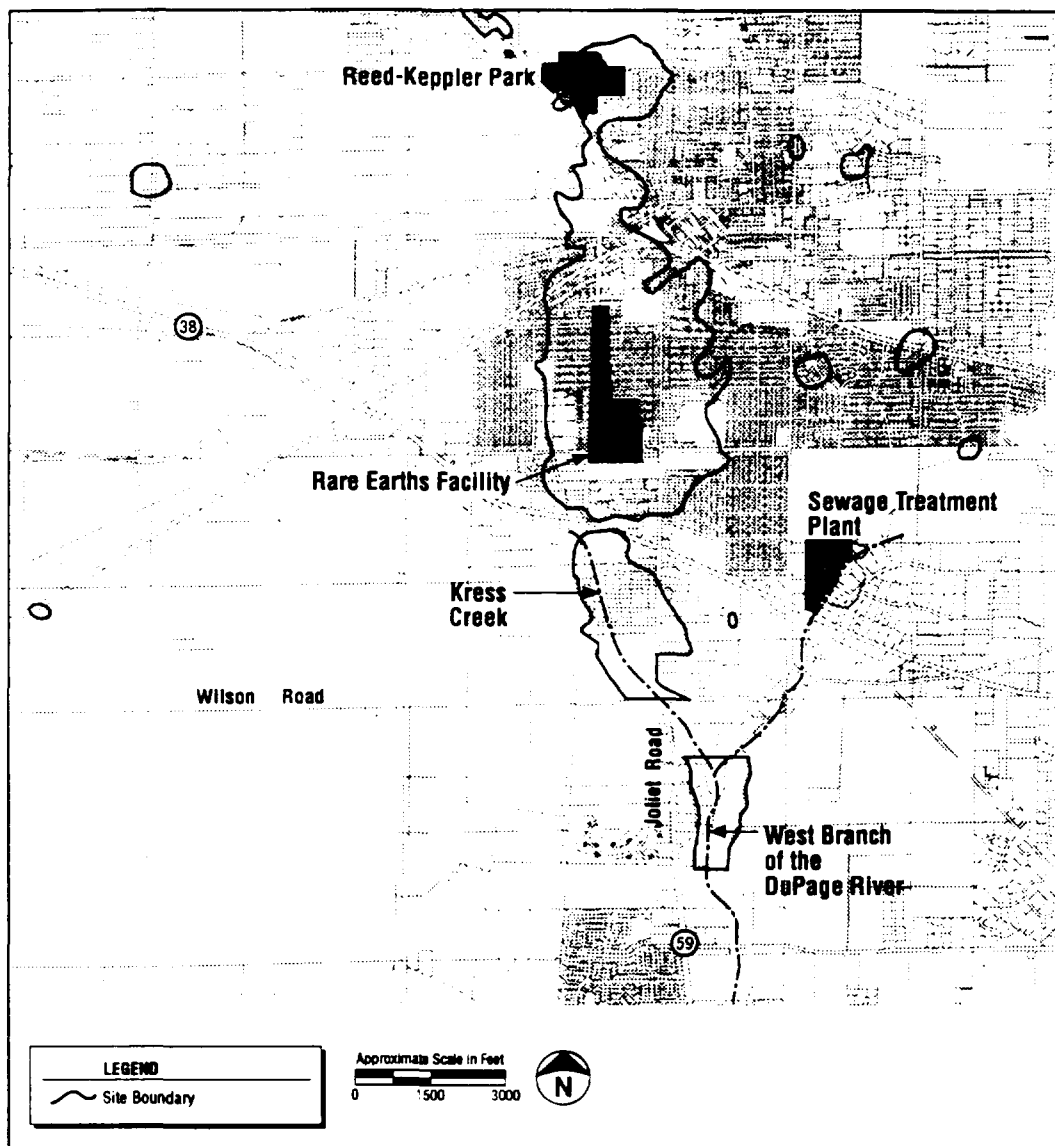


Figure 1 - Residential Areas Site Study Area

Throughout the project, many activities will be occurring simultaneously. For example, field investigation activities may be occurring at some properties while removal actions are being conducted at other properties. However, field investigation activities must be conducted at a particular property to determine if contamination is located there before a removal action can take place at that property. Removal actions are expected to begin in the fall of 1994, and are expected to continue until the end of 1995. Each field investigation activity is described in more detail in the subsections that follow.

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## Field Investigation Activities (continued)

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### Preliminary Activities

Before beginning field investigation activities, U.S. EPA must obtain access to properties that may be affected by field activities. Before any work is conducted, U.S. EPA will send letters to property owners, requesting permission for U.S. EPA's contractor, CH2M Hill, to collect samples and survey their properties. U.S. EPA's project personnel also will visit property owners to answer any questions they might have. U.S. EPA will inform property owners of the sampling and surveying results in a confidential manner.

### Indoor Radon/Thoron Monitoring and Gamma Radiation Measurements

Indoor radon/thoron monitoring and measurement of indoor gamma radiation levels will occur in two phases. Phase I began in early January 1994 and will continue through mid-March. Phase II sampling will be conducted during the winter months of 1995 and 1996. The work is being conducted during the winter because levels of indoor radon/thoron are highest when homes are tightly closed against the cold. The results will help determine whether contaminated materials have been placed near exterior walls or beneath foundations of homes.

As of March 1st, indoor radon/thoron monitoring had been completed in approximately 60 homes. During Phase I activities, approximately 100 radon and thoron monitoring devices will be placed in homes for 7-10 days. The devices will be placed in crawlspaces or basement areas, closest to the ground, to obtain the most conservative readings. Indoor gamma radiation measurements are being taken simultaneously with the indoor radon and thoron monitoring. These measurements are taken by scanning crawlspaces or basement areas with gamma scintillation detectors or portable instruments that measure gamma exposure and dose.

The results will be compared to background (naturally occurring) levels of radon/thoron and gamma radiation to determine whether contamination may be present. Background levels of radon/thoron and gamma radiation are being determined by conducting the same activities in homes at uncontaminated locations, in areas that have not been impacted by the operations of the Kerr-McGee factory. Additional soil sampling and other radiation monitoring may be required if

results are inconclusive (see "Soil Sampling" and "Radiological Characterization Surveys" subsections on page 4).

### Pilot Study

For the Residential Areas site, U.S. EPA has determined that a pilot study is the first, critical step in conducting full-scale field investigation activities. The pilot study will take place during the first month of field activities, and will involve approximately 120 different properties. Properties investigated during the pilot study will range from those U.S. EPA knows are contaminated to those known to be free of contamination. Based on the investigations at the uncontaminated properties, the pilot study will allow U.S. EPA to determine the range of background (naturally-occurring) levels of radioactivity.

The pilot study includes outdoor gamma scan surveys and analysis of soil samples using both laboratory analyses and in-situ gamma spectroscopy. (In-situ gamma spectroscopy involves bringing laboratory-type equipment into the field to obtain soil concentration data without having to collect soil samples.) With the information collected during the pilot study, U.S. EPA may be able to develop a correlation between measurements taken with field instruments and the results achieved in the laboratory. Developing a correlation may eliminate or significantly reduce the need for extensive and time-consuming soil sampling.

The pilot study will establish decision tools that will be used throughout the discovery and characterization phases, which in many cases will allow U.S. EPA to determine whether residential soils are contaminated above or below the level requiring a removal action. With the results from the pilot study, U.S. EPA can calibrate field and laboratory instruments to predict radionuclide concentrations in soils from gamma activity. This may speed up the field investigation and removal activities.

The pilot study also will determine the limitations of using gamma surveys to identify contaminated properties. For example, U.S. EPA anticipates that properties located near the Kerr-McGee factory will be affected by gamma radiation, or "shine," emitted from the radioactive materials located there. Therefore, gamma scans will not provide an accurate prediction of contamination at a property near the Kerr-McGee factory.

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## Field Investigation Activities (continued)

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Based on the pilot study, U.S. EPA will identify situations when properties may require additional soil sampling and characterization.

In addition, the pilot study will include sampling for three metals (lead, barium and chromium) that may be associated with the radioactive materials. These three metals were found at the Kerr-McGee factory at levels above other background samples that U. S. EPA has collected. The pilot study will determine if there is a correlation between elevated levels of radioactivity and metals.

### Close Support Laboratory

IDNS will set up and staff a laboratory in the West Chicago area to analyze soil samples collected during field activities. The laboratory will have the proper equipment and qualified technicians and chemists who can quickly analyze soil samples collected during field investigation activities. The laboratory will have gamma spectroscopy equipment for detecting and measuring gamma radiation in soils. Additional staff and equipment may be supplied by CH2M Hill if needed. The laboratory will analyze all soil samples collected from the Residential Areas site for radioactivity and will shorten the waiting period for results from several months to two days. (Soil samples collected for metals analysis will be sent to a different lab.)

### Soil Sampling

U.S. EPA's primary criterion for determining whether a property is contaminated is the concentration of radionuclides found in soil samples. U.S. EPA has set a standard of 5 picoCuries per gram of dry soil (5 pCi/g) above background levels. Amounts exceeding this level will qualify for removal action. One way to determine if soil exceeds this criterion is to analyze soil activity levels. This can be done through the use of in-situ gamma spectroscopy or by collecting soil samples. Soil samples that are collected will be analyzed in the IDNS laboratory in the West Chicago area to identify radionuclide concentrations.

Soil samples also will be taken to confirm gamma spectroscopy results, and to further characterize potentially contaminated properties identified by other survey methods. Soil samples will be collected by two different methods. Surface soil samples at a depth of

0-6 inches will be collected using a golf course hole or cup "plugger." A hand auger will be used to obtain samples taken from depths of 6-12 inches or greater.

### Radiological Characterization Surveys

Radiological characterization surveys will be performed on all properties in the Residential Areas site study area. They will begin once the results from the pilot study are known. Based on correlations between field instrument measurements and laboratory results established in the pilot study, the radiological characterization surveys will be used as one way to determine whether a property is contaminated above U.S. EPA's allowable level.

The surveys may consist of three types of measurements: 1) surface gamma scanning (walkover) measurements, 2) in-situ gamma spectroscopy measurements, and 3) exposure rate measurements. Surface gamma scan surveys will be conducted at each property in the Residential Areas site study area. Surface gamma scan surveys will provide information on the location, surface distribution, and relative amount of surface soil contamination. Surveyors will walk across properties holding detectors approximately 6 inches above the ground surface. Scans will be conducted in such a way that 100 percent of the accessible surface of each property will be surveyed.

In-situ gamma spectroscopy and exposure rate measurements will be used when additional information is needed for characterization purposes or to evaluate risks associated with contamination. The decision to use these additional survey methods (as well as soil sampling, discussed under the "Soil Sampling" subsection on this page) at a particular property will be made after the gamma scan results from that property are reviewed. The basis for determining which properties should be surveyed with the in-situ gamma spectroscopy system will be determined in the pilot study.

## Next Step

Contaminated soil will be removed from properties where contamination is found above U.S. EPA's allowable levels in order to prevent long-term risks associated with the radioactive materials. Before conducting the actual removal activities, U.S. EPA will conduct planning and preparation activities, including the development of a study called an Engineering Evaluation/Cost Analysis (EE/CA).

The EE/CA will describe two alternatives for cleanup with contingent actions. The first alternative, which U.S. EPA is required by law to evaluate for all Superfund sites, is a "no action" alternative. The second alternative describes the removal and disposal of contaminated soils. In its explanation of the second alternative, U.S. EPA will provide an estimate of the volume of contaminated soils to be removed. The EE/CA also will include a qualitative discussion of the short-term risks to workers and the community from the removal efforts as well as residual risks from materials left behind. In addition, the EE/CA document will discuss the goal to reduce contamination to "as low as reasonably achievable (ALARA)" levels. The ALARA

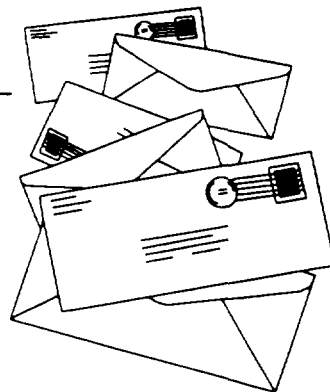
plan will describe this goal and how it may be obtained under various site conditions.

Before starting the removal activities, U.S. EPA will make the EE/CA document available to the public for a 30-day comment period. During this period, the public will have the opportunity to review the document at the information repositories and provide comments to U.S. EPA. U.S. EPA also will hold a public meeting to present the document and to answer questions from the public. As the comment period approaches, U.S. EPA will publish a notice in a local newspaper announcing the availability of the EE/CA and the start of the public comment period. U.S. EPA will review and consider all public comments before making a final decision on how to proceed.



### Mailing list additions

If you did not receive this fact sheet by mail, then you are not on U.S. EPA's mailing list to receive further information about the Kerr-McGee Superfund sites. If you would like to be added to the mailing list, please fill out this form and return it to Eileen Deamer at the address indicated on the back page.



Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_

Affiliation: \_\_\_\_\_

## Information Repositories

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If you would like to review the "Work Plan for the Engineering Evaluation/Cost Analysis and Remedial Investigation/Feasibility Study", or any other document that has been prepared for the Residential Areas site or other Kerr-McGee Superfund sites, visit the information repositories at the following locations:

**West Chicago Public Library**  
118 West Washington Street  
West Chicago, Illinois  
(708) 231-1552

**Hours:**  
Monday--Thursday 9:00 a.m.--9:00 p.m.  
Friday and Saturday 9:00 a.m.--5:00 p.m.  
Closed Sundays

**Warrenville Public Library**  
28W751 Stafford Place  
Warrenville, Illinois  
(708) 393-1171

**Hours:**  
Monday--Thursday 10:00 a.m.--9:00 p.m.  
Friday 10:00 a.m.--7:00 p.m.  
Saturday 10:00 a.m.--5:00 p.m.  
Closed Sundays

## For Additional Information

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If you are new to the area, or would like additional background information about the Residential Areas site or other Kerr-McGee Superfund site, contact any of the following persons at the U.S. EPA Region 5 Office; 77 West Jackson Boulevard; Chicago, Illinois, 60604:

**Rebecca Frey**  
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**Eileen Deamer**  
Community Relations Coordinator  
All Kerr-McGee Superfund sites  
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**David Seely**  
Remedial Project Manager  
Reed Keppler Park site and  
West Chicago Sewage Treat-  
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**Chicago, Illinois 60604**



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